



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/614,338	07/08/2003	Farshid Nowshadi	060707-1280	7873

24504 7590 04/07/2008
THOMAS, KAYDEN, HORSTEMEYER & RISLEY, LLP
600 GALLERIA PARKWAY, S.E.
STE 1500
ATLANTA, GA 30339-5994

EXAMINER

MAGLO, EMMANUEL K

ART UNIT	PAPER NUMBER
----------	--------------

2619

MAIL DATE	DELIVERY MODE
-----------	---------------

04/07/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/614,338

Applicant(s)

NOWSHADI, FARSHID

Examiner

EMMANUEL MAGLO

Art Unit

2619

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period **will** apply and **will** expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply **will**, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 December 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6,9-19 and 22-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6,9-19 and 22-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

Art Unit: 2619

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 2, 9, 10, 11, 12, 13, 14, 15, 22, 23, 24, 25, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Iverson et al. (US 6,052,379)** hereinafter referred to as Iverson, in view of **Jeffries et al (US 6,657,960)**, hereinafter referred to as Jeffries.

Consider claims 1, 13, 14, and 26, Iverson describes a method and a system for allocating a shared resource among a plurality of devices, comprising

associating a bucket to each one of the plurality of devices wherein the plurality of devices share a shared resource (Fig. 10, and Col. 2 lines 40-42, “the priority scheme maintains two buckets to track the current bandwidth delivery rate and unused committed bandwidth”).

assigning a fill rate to each bucket where each bucket accrues a predetermined number of credits for each time period the associated device is stalled, wherein each fill rate is different, each fill rate indicating access priority assigned to the associated device, (Iverson discloses bandwidth delivery rate; the user is accumulating credit once the water is above the midpoint and continues rising, Col. 2 lines 44-49. In addition, the excess of bandwidth is caused by the period of inactivity for the time the associated device is stalled, "up to a configured point", that is accruing a predetermined number of credit. Excess bandwidth is thus drained for "users are allowed to temporarily send a burst of traffic or a committed burst (B_c) for short intervals at a higher rate in packet-based delivery systems", Col. 2 lines 54-59).

assigning a drain rate to each bucket where each bucket drains a predetermined number of credits for each time period the associated device is granted access to the shared resource wherein each drain rate is different, each drain rate indicating access priority assigned to the associated device, (Col. 2 lines 28-34, "users are allowed to temporarily send a burst of traffic or a committed burst (B_c) for short intervals at a higher rate in packet-based delivery systems").

comparing each bucket to determine a grant bucket having the most number of credits at a specific time, and

granting access to the shared resource to the device associated with the grant bucket. The water level in the first bucket represents the current bandwidth delivery rate for the User. If the water level is above the midpoint and is rising, the User is sending

Art Unit: 2619

traffic below their CIR and is accumulating credit for the unused allocated bandwidth. If the water level is above the midpoint but is falling, the User is sending traffic above their CIR but has not exceeded the committed burst capacity configured. If the water level is below the bucket midpoint, the User has used up their committed burst capacity." And Col. 3, lines 1-10: "If one considers the midpoint of the first bucket to be the origin, water levels above the midpoint of the first bucket are considered positive and those below are considered negative with the midpoint being equal to zero. When the water level in the first bucket is above the zero, the priority is derived from the water level in the first bucket relative to the range from zero to the top of the bucket establishing a high priority band. The actual priority value is determined by a discrete mapping of the water level onto a range of high priority values in the high priority band").

Iverson describes the claimed invention except explicitly that *each fill rate (and each drain rate) is different, each fill rate (and each drain rate) indicating access priority assigned to the associated device*. Jeffries in the same field of endeavor teaches assigning differentiated levels of service to customer. The flow rates are time dependent, making each filling rate (increase) different, and each drain rate (decrease) different, for, Col. 5 lines 1-5, "the method and system also comprise linearly increasing a flow for a pipe of the plurality of pipes based on the minimum flow or the maximum flow if excess bandwidth exists and if the flow for the pipe of the plurality of pipes is less than the maximum flow for the pipe. The method and system also comprise exponentially decreasing the flow for the pipe of the plurality of pipes based on the minimum flow or the maximum flow if excess bandwidth does not exist and the flow is

Art Unit: 2619

greater than the minimum flow for the pipe". It would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the different flow rates service admission priorities as taught by Jeffries to the teaching of Iverson in order to implement a differentiated service for the plurality of devices so that every device is granted access to the shared resource.

In regards to claims 2 and 15, a common equipment 72 as a shared resource represented in a TDM a communication system (Fig. 3)

In regards to claims 9, 10, 22 and 23, determining a maximum latency when a bucket reaches a maximum number of credits and granting immediate access to the shared resource to the device associated with bucket reaching the number of credits when the maximum latency is determined. With reference to Fig. 11, Iverson teaches maximum level corresponding to the committed burst bandwidth credit. This credit dimension of the first bucket 402 represents the amount of bandwidth that a User may transmit in a burst, potentially above the CIR, and expect reliable delivery to the network. The water level of the first bucket (B_c) represents the amount of bandwidth accumulated by the user above the CIR rate up to the maximum provisioned for the user (B_c).

In regards to claims 11, 12, 24, and 25, Iverson describes *dynamically adjusting one or more of the fill rate and drain rate associated with one or more buckets for load balancing one or more of the plurality of devices*. (Col 18 lines 20-31, "in both the high and low priority cases, the actual priority value is derived by a mapping function that takes a 16 bit representation of the water level and determines the bit position of the

Art Unit: 2619

most significant set bit in that representation. The bit position is then used as an index into an array of discrete priority values. The contents of the arrays provide the actual priority values delivered to the hardware. The array contents can be set to any priority value at any position allowing complete freedom to adjust the priority of a port at any bandwidth request rate”).

Claims 3-6 and 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iverson in view of Jeffries and further in view of Dunnihoo (US 6,185,641 B1) hereinafter referred to as Dunnihoo.

In regards to claims 3-6, and 16-19, Iverson discloses *one or more memory bandwidth associated with one or more of DRAM, SDRAM, SRAM, and EPROM and the shared resource comprises a bus connected to at least one peripheral device including one or more of TDM, UART, USB and PCI, and the plurality of devices comprise at least a combination of a DMA controller, a network processor and a protocol processor*. Iverson discloses memory bandwidth, the TDM except explicitly that memory bandwidth is associated with one of DRAM, SDRAM, SRAM, and EPROM and the plurality of devices comprise at least a combination of a DMA controller, a network processor and a protocol processor. Dunnihoo in the same field of endeavor teaches allocating memory management unit between a plurality of devices representing plurality of endpoints, (Fig. 4) schematically representing a USB microcontroller and comprising a DMA controller 86 and the host processor and the control unit. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the teaching of Dunnihoo to Iverson in order to implement a differentiated service for the plurality of

Art Unit: 2619

devices by improving the memory management so that every device is granted access to the shared resource.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to EMMANUEL MAGLO whose telephone number is (571)270-1854. The examiner can normally be reached on Monday - Friday 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on (571)272-3088. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Emmanuel Maglo
Patent Examiner
April 7, 2008

/Hassan Kizou/
Supervisory Patent Examiner, Art Unit 2619